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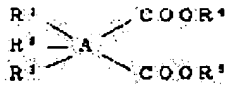
(54) POLYOLEFINIC RESIN COMPOSITION

(57)Abstract:
PURPOSE: To obtain a composition useful for a molded article, having excellent fluidity.processability, modulus in flexure, transparency, etc., by mixing a specific resin component with an ester having a specific structure and a nucleating agent for polyolefin.
CONSTITUTION: This composition is obtained by mixing (A) preferably 100 pts.wt. of one or more resin components selected from a group consisting of a PP-based resin and a polyolefinic thermoplastic elastomer with (B) preferably 0.2-20 pts.wt. of one or more alicyclic dicarboxylic acid esters of the formula (A is cyclohexene ring or cyclohexane ring; R1 to R3 are each H, a 1-5C straight-chain or branched-chain alkyl or alkenyl; R4 and R are each a 6-28C straight-chain or branched-chain alkyl or alkenyl) and (C) preferably 0.01-5 pts.wt. of a nucleating agent [preferably aluminum hydroxybis(tert-butyl benzoate), etc.].



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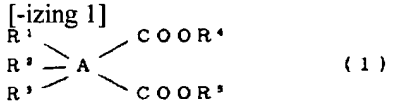
* NOTICES *

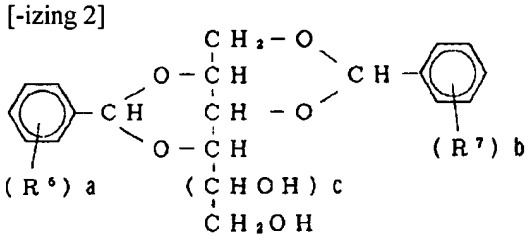
CLAIMS

[Claim]
[Claim 1] The polyolefine system resin constituent characterized by coming to blend one sort expressed with a general formula (1), or two sorts or more of alicyclic dicarboxylic-acid ester and the nucleating additives for polyolefines to one sort or two sorts or more of resinous principles chosen out of the group which consists of a polypropylene regin and polyolefine system thermoplastic elastomer.
[-izing 1]



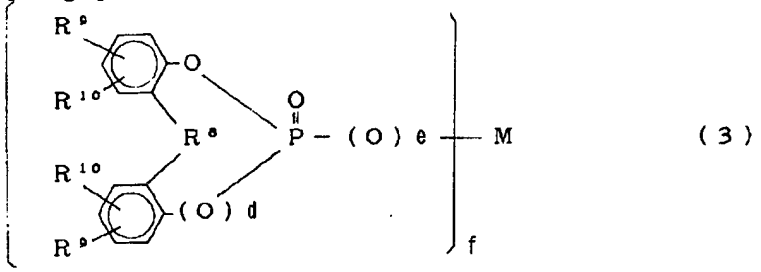
(1)

A expresses a cyclohexene ring or a cyclohexane ring among [formula. R1, R2, and R3 -- an identity -- or -- differing -- a hydrogen atom, the shape of a straight chain of carbon numbers 1-5, a branched-chain alkyl group, the shape of a straight chain of carbon numbers 2-5, and a branched-chain alkenyl machine -- or -- and a methylene group is expressed R4 and R5 -- an identity -- or it differs and the shape of a straight chain, the branched-chain alkyl group, or alkenyl machine of carbon numbers 6-28 is expressed]
[Claim 2] A polyolefine system resin constituent given in the claim 1 characterized by coming to carry out alicyclic dicarboxylic-acid ester 0.01-5 weight section combination of 0.2 - 20 weight section and the nucleating additive for polyolefines to the resinous principle 100 weight section.
[Claim 3] A polyolefine system resin constituent given in the claim 1 which are one sort or two sorts or more of compounds chosen out of the group which the nucleating additive for polyolefines becomes from the amide compound expressed with the aromatic Lynn system compound and general formula (6) which are expressed with an aluminum hydroxy screw (tert-butyl benzoate), the sorbitol system compound expressed with a general formula (2), a general formula (3), (4), or (5).
[-izing 2]



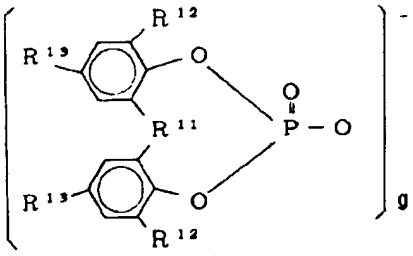
(2)

the inside of [formula, and R6 and R7 -- an identity -- or it differs and a hydrogen atom, the shape of a straight chain of carbon numbers 1-4, a branched-chain alkyl group, the shape of a straight chain of carbon numbers 1-4, a branched-chain alkoxy group, and a halogen atom are expressed a and b express the integer of 1-3, respectively. c shows 0 or 1.]
[-izing 3]



(3)

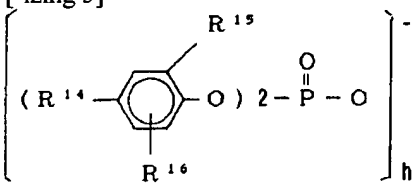
the inside of [formula, and R8 -- direct coupling, a sulfur atom, or an alkylidene machine -- expressing -- R9 and R10 -- an identity -- or it differs and a hydrogen atom, an alkyl group, or a cycloalkyl machine is expressed M expresses a metal atom. d and e show 0 or 1, respectively. f expresses a metaled valence.]
[-izing 4]



(4)

R11 expresses direct coupling, an alkylene machine, or an alkylidene machine among [formula. R12 and R13 -- an identity -- or it differs and a hydrogen atom, the alkyl group of carbon numbers 1-12, a cycloalkyl machine, an aryl group, or an aralkyl machine is expressed A expresses an ammonium ion or an organic ammonium ion. g expresses the integer of 1-6.]

[-izing 5]



(5)

the inside of [formula, and R14, R15 and R16 -- an identity -- or it differs and a hydrogen atom, the alkyl group of carbon numbers 1-12, a cycloalkyl machine, an aryl group, or an aralkyl machine is expressed A is as the general formula (4) having indicated. h expresses the integer of 1-6.]

R17-(CONH-R18)i (6)

R17 expresses the residue of the aliphatic series of the saturation of carbon numbers 2-30, or an unsaturation, an alicycle group, or an aromatic polycarboxylic acids among [formula. R18 expresses the cycloalkyl machine or phenyl group of carbon numbers 3-12. i shows the integer of 2-6.]

[Claim 4] A polyolefine system resin constituent given in the claim 1 whose nucleating additives for polyolefines are one sort expressed with a general formula (2), or two sorts or more of sorbitol system compounds.

[Translation done.]

* NOTICES *

EXAMPLE

[Example] An example is hung up over below and this invention is explained to it in detail. In addition, the property of the resin constituent in each example was measured by the following technique, and was evaluated.
[0057] (1) To transparency and the **** resinous principle, this predetermined ester and this predetermined nucleating additive were mixed, and the dry rise was performed by heating 150 degrees C in gear oven for 1 hour. Using the 30t press which carried out the temperature up of the compound which carried out the dry rise to 200 degrees C, under the preheating (3 minutes) and the condition of pressurization (2 minutes, 100kg/cm2), the sheet with a thickness of about 1mm was created, and the transparency and the gloss of a sheet which were obtained were observed visually and it evaluated to the following three-stages.
O :fitness and **: -- a little -- fitness Inferior :x [0058] (2) The compound which carried out the torque above-mentioned dry rise at the time of extrusion was ******ed with the extruder (temperature:230-245 degree C, screw-speed:40rpm), and while cooling and pelletizing in the cold pelletizer, the torque at the time of extrusion was measured.
[0059] (3) The compound which carried out flexural strength pelletizing with the bending elastic modulus was fabricated with the injection molding machine (resin temperature:240 degree C, die-temperature:50 degree C), the concerned mold goods were pulled as a sample, and the three point formula bending test was measured based on JIS-K-7203 using the testing machine. In addition, it was taken as 25 degrees C by the test temperature, and the test period was taken as 10mm/min.
[0060] This ester and this nucleating additive which were used in the example or the example of a comparison are shown below.
This ester A= hexahydrophthalic acid ****** nonyl B= ********** (n-******)
C= hexahydrophthalic acid ********** D= hexahydrophthalic acid dioleoyl E=4-methyl hexahydrophthalic acid ****** nonyl F= tetrahydrophtal acid ********** G= tetrahydrophtal acid ** (2-hexyl ******)
The H=4-methyl tetrahydrophtal acid ****** nonyl I= 3, 6-, and a methylene tetrahydrophtal acid ****** nonyl [0061] This nucleating additive a= aluminum hydroxy screw (tert-butyl benzoate)
b= 1, 3:2, 4-****** zylidene sorbitol c= 1, 3:2, 4-screw (p-methyl benzylidene) sorbitol d= 1, 3:2, the 4-(2, 4-dimethyl benzylidene, benzylidene) sorbitol e= phosphoric acid 2, 2-methylene screw (4, 6-G tert-buthylphenyl) sodium [0062] To the example 1 - the 9 polypropylene (tradename "PN-150", Tokuyama Soda Co., Ltd. make) 100 weight section, this ester and this nucleating additive of the specified quantity were blended, the resin constituent was prepared, and the physical properties of this thing were evaluated. The obtained result is shown in the 1st table.
[0063] To the example 1 of a comparison, - the 5 "PN-150" 100 weight section, this ester or this nucleating additive of the specified quantity was blended, the resin constituent was prepared, and the physical properties of this thing were evaluated. The obtained result is shown in the 1st table.
[0064] The physical properties of the example [itself] 6 of a comparison "PN-150" were evaluated. The obtained result is shown in the 1st table.
[Table 1]

第 1 表

	実施例									比較例					
	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6
PN-150	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
本エステルA	3									3					
本エステルB		3													
本エステルC			3												
本エステルD				3											
本エステルE					3										
本エステルF						3									
本エステルG							3				3				
本エステルH								3							
本エステルI									3						
本核剤a	0.2														
本核剤b		0.2				0.2						0.2			
本核剤c			0.2				0.2		0.2				0.2		
本核剤d				0.2				0.2							
本核剤e					0.2									0.2	
トルク (kg-cm)	42	41	41	41	42	41	41	41	41	37	36	48	48	49	43
シートの透明性	△	○	○	○	△	○	○	○	○	×	×	○	○	△	×
シートの腰	△	○	○	○	△	○	○	○	○	×	×	○	○	△	×
曲げ弾性率 (kg/mm²)	135	139	137	140	138	139	139	137	137	112	114	150	151	149	136
曲げ強度 (kg/mm²)	4.5	4.8	4.9	4.9	4.7	4.7	4.6	4.7	4.7	4.1	4.0	5.3	5.2	5.0	4.6

[0065] To the example 10 - 11 polyolefine system thermoplastic-elastomer (tradename "thermostat run 5850N", Mitsubishi Petrochemical Co., Ltd. make) 100 weight section, this ester and this nucleating additive of the specified quantity were blended, the resin constituent was prepared, and the physical properties of this thing were evaluated. The obtained result is shown in the 2nd table.

[0066] To the example 7 of a comparison, - the 8"thermostat run 5850N" 100 weight section, this ester or this nucleating additive of the specified quantity was blended, the resin constituent was prepared, and the physical properties of this thing were evaluated. The obtained result is shown in the 2nd table.

[0067] The physical properties of the example [itself] 9 of a comparison "thermostat run 5850N" were evaluated. The obtained result is shown in the 2nd table.

[Table 2]

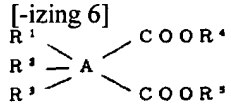
第 2 表

	実施例		比較例		
	10	11	7	8	9
サーモラン5850N	100	100	100	100	100
本エステルA	3				
本エステルF		3	3		
本核剤c	0.2			0.2	
本核剤d		0.2			
トルク (kg-cm)	58	57	52	67	60
シートの腰	○	○	△	○	△
曲げ弾性率 (kg/mm²)	29	28	27	30	28
曲げ強度 (kg/mm²)	0.80	0.80	0.78	0.84	0.80

[Translation done.]

MEANS

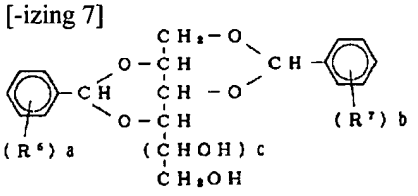
[The means for solving a technical problem] This invention persons choose the ester compound which has specific structure to a resinous principle, in order to attain the above-mentioned purpose, zealously, as a result of a study, they find out that a desired effect is acquired, without spoiling the reforming effect which each additive has by using together with the nucleating additive for polyolefines, and blending, and they came to complete this invention based on such knowledge.
[0009] That is, it is characterized by the polyolefine system resin constituent concerning this invention coming to blend one sort expressed with a general formula (1), or two sorts or more of alicyclic dicarboxylic-acid ester (henceforth "this ester") and the nucleating additives for polyolefines (henceforth "this nucleating additive") to one sort or two sorts or more of resinous principles (it being named "this resinous principle" generically below.) chosen out of the group which consists of a polypropylene regin and polyolefine system thermoplastic elastomer.
[0010]
[-izing 6]



(1)

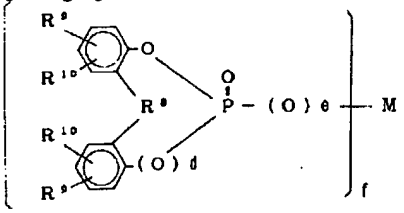
A expresses a cyclohexene ring or a cyclohexane ring among [formula. R1, R2, and R3 -- an identity -- or -- differing -- a hydrogen atom, the shape of a straight chain of carbon numbers 1-5, a branched-chain alkyl group, the shape of a straight chain of carbon numbers 2-5, and a branched-chain alkenyl machine -- or -- and a methylene group is expressed R4 and R5 -- an identity -- or it differs and the shape of a straight chain, the branched-chain alkyl group, or alkenyl machine of carbon numbers 6-28 is expressed]
[0011] Although especially the manufacture technique of this ester is not limited and well-known arbitrary operations can be conventionally used for it, the method of esterifying the alicyclic dicarboxylic acid of a predetermined saturation or an unsaturation, or the acid anhydride and a predetermined fatty alcohol as the general technique, while removing produced water under presence of a non-catalyst or a catalyst is mentioned. Moreover, this ester which has a cyclohexane ring can be obtained also by carrying out nuclear hydrogenation of this ester which has a cyclohexene ring concerning this invention.
[0012] As an alicyclic unsaturation dicarboxylic acid or its anhydride, the acid anhydride obtained by the reaction of deca trien, such as a tetrahydrophtal acid, a methyl tetrahydrophtal acid, a dimethyl butenyl tetrahydrophtal acid, a ******** acid, methyl ******** acids, those anhydrides and those isomers (a geometrical isomer and a structural isomer are included.), and **********, alpha-terpinene, and a maleic anhydride, its disengagement carboxylic acid, etc. are illustrated.
[0013] As an alicyclic saturation dicarboxylic acid or its anhydride, hexahydrophthalic acid, methyl hexahydrophthalic acid, ******** acid hydrogenation object, methyl ******** acid hydrogenation object, 1, and 4-cyclohexane dicarboxylic acids, these acid anhydrides, those isomers (a geometrical isomer is included.), etc. are illustrated.
[0014] The fatty alcohol concerning this invention is a fatty alcohol of the saturation of carbon numbers 6-28, or an unsaturation, and is a fatty alcohol of carbon numbers 8-24 more preferably. Since the compatibility to this resinous principle falls in less than six alcohol, and it is easy to carry out bleeding of the carbon number, and the molecular weight of ester becomes small and oil resistance falls in the alcohol in which a volatility-proof is inferior with alcohol and a carbon number exceeds 28 conversely, it is not desirable.
[0015] As a desirable fatty alcohol concerning this invention A heptanol, 2-ethyl hexanol, n-octanol, iso nonanol, A 3, 5, and 5-trimethyl hexanol, n-decanol, an iso decanol, an undeca Norian, a dodecanol, a tridecyl alcohol, and ********** 610 (a tradename --) vista chemical Far East company make and ********** 79 -- said -- 911 (a tradename --) the product made from Shell Chemistry, and gold [a diamond / 79] -- said -- 911 -- said -- 11 -- said -- 113 (a tradename --) The dimerization alcohol obtained by the gar bed reaction of the Mitsubishi Kasei Corp. make, a myristyl alcohol, cetyl alcohol, a stearyl alcohol, a behenyl alcohol, oleyl alcohol, and these alcohol is illustrated.
[0016] As an esterification catalyst chosen and applied in the above-mentioned esterification A sulfuric acid, a hydrochloric acid, a phosphoric acid, Para toluenesulfonic acid, a methanesulfon acid, Acid catalysts, such as an alkyl sulfuric acid, an aluminum sulfate, lithium fluoride, potassium chloride, Metal salts, such as a cesium chloride, a calcium chloride, ferric chloride, and an aluminium phosphate, ZnO2 / C and SnO, and SiO2- metallic oxides, such as TiO2, ZnO, Fe2O3, and a heteropolyacid, -- Alumina-alkali multicomputer systems, such as aluminum2O3-KOH-LiOH and aluminum2O3-NaOH, Nature, such as a mordenite and a ** cation-ized Y zeolite, and a composite zeolite, Organic metals, such as ion exchange

resin, such as solid-state superacid, such as SO42-/ZnO2 and SO42-/TiO2, a cation exchange resin, and an anion exchange resin, tetrapod alkyl titanate and its polymer, Bu2Sn(OBu) alumnus (OBu)2, and the oxalic acid first tin, etc. are illustrated.
[0017] Especially as after treatment after an esterification reaction conclusion, although not limited, superfluous alcohol is distilled out of the inside of a system, for example, it passes through saturation and a rinsing process, and the method of finally refining ester is mentioned. Moreover, it is also possible to use for the ester which does not refine, only distills off superfluous alcohol out of a system, and starts this invention especially.
[0018] As ester especially recommended among this ester obtained in this way, hexahydrophthalic acid ****** nonyl, ********** (n-******), hexahydrophthalic acid **********, hexahydrophthalic acid dioleoyl, 4-methyl hexahydrophthalic acid ****** nonyl, tetrahydrophtal acid ****** nonyl, tetrahydrophtal acid ** (n-******), tetrahydrophtal acid **********, tetrahydrophtal acid dioleoyl, 4-methyl tetrahydrophtal acid ****** nonyl, 3, and 6-, a methylene tetrahydrophtal acid ****** nonyl, etc. are illustrated.
[0019] One sort or two sorts or more of compounds chosen out of the group which consists of an amide compound expressed with the aromatic Lynn system compound and general formula (6) which are expressed with an aluminum hydroxy screw (tert-butyl benzoate), the sorbitol system compound expressed with a general formula (2), a general formula (3), (4), or (5) as this nucleating additive recommended are illustrated.
[0020]
[-izing 7]



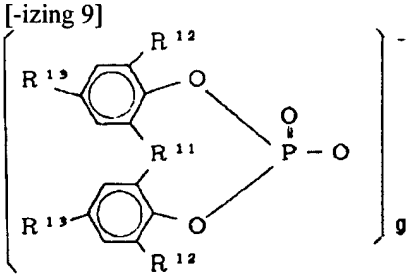
(2)

the inside of [formula, and R6 and R7 -- an identity -- or it differs and a hydrogen atom, the shape of a straight chain of carbon numbers 1-4, a branched-chain alkyl group, the shape of a straight chain of carbon numbers 1-4, a branched-chain alkoxy group, and a halogen atom are expressed a and b express the integer of 1-3, respectively. c shows 0 or 1.]
[0021]
[-izing 8]



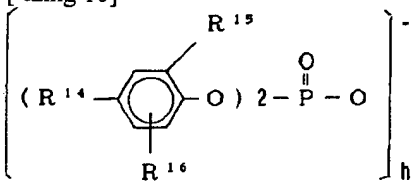
(3)

the inside of [formula, and R8 -- direct coupling, a sulfur atom, or an alkylidene machine -- expressing -- R9 and R10 -- an identity -- or it differs and a hydrogen atom, an alkyl group, or a cycloalkyl machine is expressed M expresses a metal atom. d and e show 0 or 1, respectively. f expresses a metaled valence.]
[0022]
[-izing 9]



(4)

R11 expresses direct coupling, an alkylene machine, or an alkylidene machine among [formula. R12 and R13 -- an identity -- or it differs and a hydrogen atom, the alkyl group of carbon numbers 1-12, a cycloalkyl machine, an aryl group, or an aralkyl machine is expressed A expresses an ammonium ion or an organic ammonium ion. g expresses the integer of 1-6.]
[0023]
[-izing 10]



(5)

the inside of [formula, and R14, R15 and R16 -- an identity -- or it differs and a hydrogen atom, the alkyl group of carbon numbers 1-12, a cycloalkyl machine, an aryl group, or an aralkyl machine is expressed A is as the general formula (4) having indicated. h expresses the integer of 1-6.]

[0024]

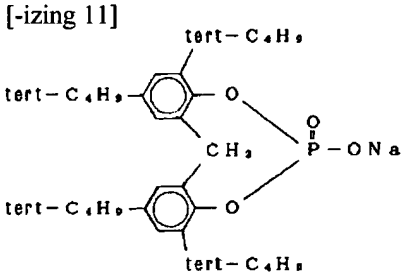
R17-(CONH-R18)i (6)

R17 expresses the residue of the aliphatic series of the saturation of carbon numbers 2-30, or an unsaturation, an alicycle group, or an aromatic polycarboxylic acids among [formula. R18 expresses the cycloalkyl machine or phenyl group of carbon numbers 3-12. i shows the integer of 2-6.]

[0025] As a sorbitol system compound expressed with a general formula (2) For example, 1, 3:2, 4-****** zylidene sorbitol, 1, 3:2, 4-screw (p-methyl benzylidene) sorbitol, 1, 3:2, 4-(p-methyl benzylidene, benzylidene) sorbitol, 1, 3:2, 4-screw (3, 4-dimethyl benzylidene) sorbitol, 1, 3:2, 4-(2, 4-dimethyl benzylidene, benzylidene) sorbitol, 1, 3:2, 4-(2, 5-dimethyl benzylidene, benzylidene) sorbitol, 1, 3:2, 4-screw (p-ethyl benzylidene) sorbitol, 1, 3:2, 4-screw (p-propyl benzylidene) sorbitol, 1, 3:2, 4-screw (p-butyl benzylidene) sorbitol, 1, 3:2, 4-screw (p-ethoxy benzylidene) sorbitol, 1, 3:2, 4-screw (p-butoxy benzylidene) sorbitol, 1, 3:2, 4-screw (p-****** benzylidene) sorbitol, 1, 3:2, 4-screw (p-****** benzylidene) sorbitol, etc. are mentioned, and it is [0026]. Especially 1, 3:2, 4-****** zylidene sorbitol, 1, 3:2, 4-screw (p-methyl benzylidene) sorbitol, 1, 3:2, 4-(p-methyl benzylidene, benzylidene) sorbitol, 1, 3:2, 4-screw (3, 4-dimethyl benzylidene) sorbitol, 1, 3:2, 4-(2, 4-dimethyl benzylidene, benzylidene) sorbitol, 1, 3:2, 4-(2, 5-dimethyl benzylidene, benzylidene) sorbitol, 1, 3:2, 4-screw (p-ethyl benzylidene) sorbitol, etc. are recommended.

[0027] The metal salt of the aromatic Lynn system compound expressed with a general formula (3) is a nucleating additive indicated by Provisional Publication No. 1736 [58 to]. The salt of alkaline earth metal, such as alkali metal, such as a lithium of the aromatic Lynn system compound which specifically has predetermined structure, sodium, and a potassium, or calcium, magnesium, strontium, and barium, is illustrated, and the metal salt of the following Lynn system compound is more specifically mentioned.

[-izing 11]



[0028] The aromatic Lynn system compound expressed with a general formula (4) or a general formula (5) is a nucleating additive indicated by the publication number 9390 [five to]. Specifically, the ammonium salt of organic phosphoric ester which has predetermined structure, or an organic predetermined amine compound salt is mentioned.

[0029] As an organic amine compound which constitutes the above-mentioned salt An ethylamine, propylamine, a butylamine, a dipropyl amine, A 2-amino pentane, a undecyl amine, a hexadecyl amine, a benzylamine, Monovalent amine compounds, such as N-aminopropyl pipecolic, a pyridine, and an amino tetrazole, An ethylenediamine, hexamethylenediamine, phenyl diamine, N, and N'-screw aminoethyl-hexamethylenediamine, 2, 2, a 4-trimethyl hexamethylenediamine, an undecamethylene diamine, Multiple-valued amine compounds, such as 4-****** -1, 7-diamino pentane, 4, 7-dioxa -1, 10-diamino decane, 1 and 6, 11-triamino undecane, 4-aminomethyl -1, and 8-diamino octane, are mentioned.

[0030] As an amide system compound expressed with a general formula (6) For example, dianilide adipate, dianilide suberate, 1, a 4-cyclo ******** dicarboxylic-acid dicyclohexyl amide, A terephthalic-acid dicyclohexyl amide, 2, 6-naphthalene dicarboxylic-acid dicyclohexyl amide, A tricarballylic acid tricyclohexyl amide, 1 and 3, 5-pentane tricarboxylic-acid tricyclohexyl amide, 1, 3, 5-cyclohexane tricarboxylic-acid thoria ******, 1, 2 and 3, 4-butane tetrapod carboxylic-acid tetracyclo hexyl amide, 3, 4-dicarboxy - 1, 2, 3, a 4-tetrahydro-1-naphthalene succinic-acid tetracyclo hexyl amide, a pyromellitic acid tetracyclo hexyl amide, etc. are mentioned.

[0031] A moldability, surface gloss, a bending elastic modulus, and flexural strength have the well-balanced performance, and that of the resin constituent which comes to blend the sorbitol system compound expressed with a general formula (2) also in the resin constituent concerning this invention are especially desirable.

[0032] The polypropylene regin concerning this invention is the general term of the polymer which makes a propylene an indispensable monomer, and, specifically, the copolymer with the homopolymer of a propylene, a propylene, ethylene, and/or 1-alkene (for example, 1-butene, 1-pentene, 1-hexene, 4-methyl-1-pentene, 1-octene, 1-decene, and such mixture) of carbon numbers 4-20, the copolymer of a propylene and styrene, etc. are illustrated. What ** of a random copolymer and a block copolymer is also contained in the above-mentioned copolymer.

[0033] The above-mentioned polypropylene regin is not limited by difference of the manufacture technique, such as isotactic ones, syndiotactic and the stereochemistry structure that is atactic and is classified, and a catalyst, a process.

[0034] The polyolefine system thermoplastic elastomer concerning this invention is not limited by the type or the manipulation technique of an elastomer, as long as a predetermined effect is acquired. the elastomer which specifically has the blend object or alloy structure which consists of an ethylene propylene diene copolymer (EPDM) or isobutylene isoprene rubber as polyethylene, polypropylene, and an elasticity phase as a hard phase -- further -- a hard phase ****** -- a transformer -1 -- syndiotactic [********** / 4---poly-/ and] -1, 2-polybutadiene and crystal polyethylene, the homopolymer system elastomer that consists of amorphous poly-**********, and an amorphous polybutadiene and a chlorinated polyethylene as an elasticity phase are illustrated

[0035] moreover, the fraction which adds organic peroxide etc. in ****** of olefin system rubber, the blended type by simple mechanical blend of polyolefin resin and olefin system rubber, and polyolefin resin, is made to carry out partial bridge formation of the rubber phase, and is obtained -- bridge formation -- a blended type and polypropylene -- a continuous phase -- carrying out -- bridge formation -- it consists of the complex which uses EPDM as a dispersed phase -- perfect -- bridge formation -- a blended type etc. is included

[0036] It is also possible to carry out the polymer blend of other resins to this resinous principle, to alloy-ize them to it, and to use them for it.

[0037] As an example of this polymer that can be blended Natural rubber, styrene-butadiene rubber, butadiene rubber, polyisoprene rubber, EPDM, nitril butadiene rubber, chloroprene rubber, isobutylene isoprene rubber, Rubber-like polymers, such as polyurethane rubber and silicone rubber, nylon 6, Nylon 66, Nylon 610, Nylon 612, Nylon 11, Nylon 12, copolymerization nylon, Amide system polymers, such as nylon MXD6 and denaturation polyamide 6T, a polyethylene terephthalate, A polybutylene terephthalate, polyhexamethylene terephthalate, Ester system polymers, such as polyethylene isophthalate, polytetramethylene sebacate, and a polypropylene horse mackerel peat, Polyethylene, the Polly 4-methyl pentene -1, a polyvinyl chloride, a polyvinylidene chloride, ABS plastics, polystyrene, an AS resin, methacrylic resin, polyvinyl alcohol, ethylene vinyl acetate, a cellulose plastic, etc. are mentioned.

[0038] Furthermore, the polystyrene system thermoplastic elastomer represented by polystyrene/polybutadiene, PVC system thermoplastic elastomer represented by a crystalline polyvinyl chloride / NBR, The thermoplastic elastomer polyester represented by polyester/polyether, The polyurethane system thermoplastic elastomer represented by the urethane structure / polyester, The polyamide system elastomer represented by a polyamide/polyester, It is possible to also blend the elastic elastomer by which the account of an example is carried out by the fluorine polymer system elastomer represented by a fluororesin/fluororubber, the ionomer system thermoplastic elastomer represented by a metal carboxy rate ion cluster / amorphous polyethylene.

[0039] although the loadings of this ester can be variously chosen according to the combination purpose, or the modality and its amount of other components used together -- usually -- this resinous principle 100 weight section -- receiving -- 0.2 - 20 weight section grade -- it is 0.2 - 10 weight section grade preferably In under 0.2 weight section, even if the predetermined reforming effect is hard to be acquired and it blends exceeding 20 weight section, it cannot expect but the inclination that a bending elastic modulus and flexural strength fall arises, and increase of a remarkable effect is not desirable, when it is what **.

[0040] In addition, if it is in the system which uses a bulking agent together, 1 - 50 weight section grade is chosen to this resinous principle 100 weight section as loadings of this ester.

[0041] As the above-mentioned bulking agent, a calcium carbonate, a fiberglass mat, titanium oxide, clay, carbon black, an antimony oxide, hydration aluminum, a magnesia, a calcium hydroxide, silicic acid, a metal powder, etc. are illustrated.

[0042] the amount of this nucleating additive used -- per [0.01] this resinous principle 100 weight section - 5 weight section -- it is 0.05 - 1 weight section preferably The case of under 0.01 weight section of the enhancement effect over transparency, a bending elastic modulus, or flexural strength is inadequate, and when exceeding 5 weight section, the bloom tends to be generated, and it is not desirable when it is what **.

[0043] As a constituent of the resin constituent concerning this invention, it can combine with this ester and various kinds of ester compounds known as a plasticizer or a lubricant can be blended suitably conventionally.

[0044] such a plasticizer ****** -- benzoates, such as ethylene glycol dibenzoate and propylene glycol dibenzoate, dibutyl phtalate, a phthalic-acid dihexyl, ********** (2-ethylhexyl), ********** (n-octyl), a phthalic acid diisononyl ester, a diisodecyl phthalate, phthalic-acid **********, a phthalic acid ditridecyl ester, and gold [a diamond / 79] -- said -- the phthalic ester of 911, and ********** 79 -- said -- phthalic esters, such as a phthalic ester of 911, a phthalic-acid dibutoxy ethyl, and a phthalic acid benzyl butyl ester, and [0045] Aliphatic system ester, such as ********** (2-ethylhexyl), ********** (n-octyl), diisononyl adipate, a diisodecyl adipate, the adipate of ********** 610, an adipate of gold one 79 a diamond, an adipate of ********** 79, an adipic-acid dibutoxy ethyl, a dioctyl azelate, and ********** (2-ethylhexyl),

[0046] Trimellitic acid ester, such as trimellitic acid **** (2-ethylhexyl), trimellitic acid **** (n-octyl), a trimellitic acid ******** nonyl, trimellitic acid triisodecyl, trimellitic acid ester of gold one 79 a diamond, trimellitic acid ester of ********** 79, and a trimellitic acid ********** ethyl, [0047] Phosphoric ester, such as tricresyl phosphate, a phosphoric-acid-2-ethylhexyl diphenyl, and a phosphoric-acid ********** ethyl, [0048] Polyester system plasticizers, such as a propylene glycol and an adipic-acid system, a propylene glycol and a phthalic-acid system, a butylene glycol and an adipic-acid system, and a propylene glycol, a sebacic-acid system, [0049] Epoxy system plasticizers, such as epoxidation soybean-oil, epoxidation linseed-oil, epoxy stearin acid octyl, 4, 5-epoxy hexahydrophthalic acid dioctyl, 4, and 5-epoxy hexahydrophthalic acid screw (9, 10-epoxy stearyl), chlorinated paraffin, etc. are illustrated.

[0050] As such a lubricant, the fatty acid ester of polyhydric alcohol, such as aliphatic system ester, such as a butyl stearate, a stearin acid octyl, stearin acid tridecyl, a lauric-acid octyl, and oleic-acid oleyl, a pentaerythritol tetrapod ****** rate, a pentaerythritol ****** pli rate, a trimethylol-propane ****** pli rate, and trimethylol-propane trio ********, is illustrated.
[0051] Although the loadings of the above-mentioned plasticizer used together by request or a lubricant are not limited especially as long as a predetermined effect is acquired, they are usually 1 - 20 weight section grade to this resinous principle 100 weight section, respectively.
[0052] Various additives, such as a stabilizer, a stabilization assistant, a workability enhancement resin, an ultraviolet ray absorbent, an antioxidant, a bulking agent, a coloring agent, a foaming agent, a resin reinforcement, a cross linking agent, an antimicrobic agent, an antifungal agent, a flame retarder, a mold releasing agent, an insecticide, a repellent, a plate-out inhibitor, and an antistatic agent, etc. can be blended with the polyolefine system resin constituent concerning this invention if needed.
[0053] Especially the manipulation technique of the polyolefine system resin constituent concerning this invention is not limited. For example, the technique of obtaining a product, and the technique of supplying and fabricating the concerned resin constituent to a direct making machine are possible by letting the polyolefine system resin constituent which carried out preliminary mulling of the additive blended this resinous principle, this ester, this nucleating additive, and if needed, and obtained it pass to various making machines.
[0054] The reserve mixing of a polyolefine system resin constituent is performed by mulling the various components of the specified quantity using conventionally well-known kneading machines, such as a Banbury mixer, a Henschel mixer, and a ribbon blender, and the addition sequence is not asked.
[0055] The polyolefine system resin constituent obtained in this way Calender molding, extrusion molding, injection molding, a paste technique, an extension manipulation, A spinning manipulation etc. is conventionally fabricated by various kinds of technique used in each field. Films, such as individual packing of industrial parts fields, such as an automobile and a homeuse-electronics product, containers, miscellaneous goods, and snack confectionery, an instant food and tobacco, The flat yarns for textiles of a carpet, such as contest the deflection [a base fabric and] made from polypropylene, Engineering works and construction fields, such as a monofilament of a rope or a fishing net, and a lagging material of a tarpaulin, ******, a structural gasket, and a makeup steel plate, It is useful as the elasticity applied to hose tubes, such as a duct hose flexible tube, a leather, the materials for agriculture, packing, an electrical-wire cable, various joint material, cold storage parts, the flexible grant agent of concrete, a porous film, etc., half-hard, and a hard resin constituent.

[Translation done.]

* NOTICES *

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TECHNICAL PROBLEM

[Object of the Invention] The fluidity and workability of a polyolefine system resin are improved and this invention aims at offering the outstanding polyolefine system resin constituent for bending, having an elastic modulus and flexural strength and surface gloss obtaining good mold goods simultaneously.

[Translation done.]

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EFFECT OF THE INVENTION

[Effect of the invention] By blending the ester system compound and the nucleating additive for polyolefines concerning this invention, the fluidity and the workability of a polyolefine system resin constituent are improved, and a bending elastic modulus, flexural strength and surface gloss, and transparency can obtain a good moldings.

[Translation done.]

PRIOR ART

[Prior art] A polypropylene regin and polyolefine system thermoplastic elastomer are known as a material useful for various intended use, such as an injection-molding article, a film, a flat yarn, fiber, a blow-molding article, and an extrusion-molding article.

[0003] Since a polypropylene regin is generally a polymer with a low glass transition temperature, it is inferior in the molding-cycle nature at the time of injection molding, and has a fault, like a bending elastic modulus and flexural strength are low. Although these faults are improved by adding the nucleating additive for polyolefines to the concerned resin, by adding the concerned nucleating additive, the melt viscosity of a resin constituent becomes high and the load at the time of extrusion molding or injection molding increases. Moreover, in the system using bulking agents, such as a calcium carbonate and a glass fiber, it had the trouble of a grade where the appearance of the mold goods obtained and homogeneity were spoiled.

[0004] A glass transition temperature is a low polymer and polyolefine system thermoplastic elastomer as well as the above-mentioned polypropylene regin has the fault that the molding-cycle nature at the time of injection molding is very inferior. When the nucleating additive for polyolefines is added to the concerned elastomer, while crystallization of a hard segment is promoted and the above-mentioned fault is improved, it has the same trouble as the case of the above-mentioned polypropylene regin, and, in addition, the room of an improvement accepts from a practical standpoint.

[0005] The following technique can be considered in order to cancel such a trouble.

How to raise a fluidity and improve a moldability by using the concerned resinous principle of low molecular weight from (1).

However, by this technique, a fall of shock resistance, a bending elastic modulus, and flexural strength cannot be caused, and the appearance of the mold goods obtained from the resin constituent which used the bulking agent together further cannot be improved.

[0006] (2) How to blend plasticization modifiers, such as a general-purpose plasticizer for polyvinyl chlorides (PVC), and a liquid paraffin.

However, by this technique, although the fluidity at the time of a manipulation is improved and the cold resistance of mold goods, flexibility, etc. improve simultaneously, a bending elastic modulus and flexural strength fall. Furthermore, these general-purpose plasticizers are inferior to the compatibility with this resinous principle, and it is deficient in the transparency and the gloss (gloss) of mold goods, and has the trouble of carrying out bleeding to a front face, in the liquid paraffin.

[Translation done.]

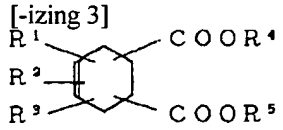
TECHNICAL FIELD

[Field of the Invention] this invention relates to a polyolefine system resin constituent useful as a molding material.
[0002] A polypropylene regin, polyolefine system thermoplastic elastomer, and those mixture are known as a material useful for various intended use, such as an injection-molding article, a film, a flat yarn, fiber, a blow-molding article, and an extrusion-molding article.
[0003] Since the shock resistance in low temperature and flexibility were low, the polypropylene regin had the inclination to receive a limit in the use especially in a cold district, and since the concerned resin had a low fluidity, when bulking agents, such as a flame retarder, and a calcium carbonate, a glass fiber, were blended and processed, it had the problem that a moldability was inferior.
[0004] Although polyolefine system thermoplastic elastomer has shock resistance and good flexibility, since a property like a polyvinyl chloride resin system elastomer or a soft polyvinylchloride resin is not provided, in spite of the room of an improvement having accepted, in addition, the improvement means effective until now is not especially known as a material in the intended use of inner sheathing, such as an automobile and a vehicle, electrical wire and a household-electric-appliances device, engineering works, construction and building materials, a hose tube, etc.

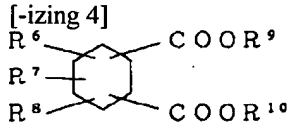
[Translation done.]

DETAILED DESCRIPTION

[Detailed description]
[0001]
[Field of the Invention] this invention relates to a polyolefine system resin constituent useful as a molding material.
[0002] A polypropylene regin, polyolefine system thermoplastic elastomer, and those mixture are known as a material useful for various intended use, such as an injection-molding article, a film, a flat yarn, fiber, a blow-molding article, and an extrusion-molding article.
[0003] Since the shock resistance in low temperature and flexibility were low, the polypropylene regin had the inclination to receive a limit in the use especially in a cold district, and since the concerned resin had a low fluidity, when bulking agents, such as a flame retarder, and a calcium carbonate, a glass fiber, were blended and processed, it had the problem that a moldability was inferior.
[0004] Although polyolefine system thermoplastic elastomer has shock resistance and good flexibility, since a property like a polyvinyl chloride resin system elastomer or a soft polyvinylchloride resin is not provided, in spite of the room of an improvement having accepted, in addition, the improvement means effective until now is not especially known as a material in the intended use of inner sheathing, such as an automobile and a vehicle, electrical wire and a household-electric-appliances device, engineering works, construction and building materials, a hose tube, etc.
[0005]
[Object of the Invention] The fluidity and the workability of a resin are improved and the shock resistance (cold resistance) in low temperature and flexibility aim this invention at offering a good polyolefine system resin constituent.
[0006]
[The means for solving a technical problem] In order that this invention persons may attain the above-mentioned purpose, zealously, to a polypropylene regin, polyolefine system thermoplastic elastomer, or those mixture, by blending the ester compound which has specific structure, they find out that a desired effect is acquired and came to complete this invention based on such knowledge as a result of the study.
[0007] That is, it is characterized by the polyolefine system resin constituent concerning this invention coming to blend one sort expressed with a general formula (1) or a general formula (2), or two sorts or more of alicyclic dicarboxylic-acid ester (for it to be named "this ester" generically below.) to a polypropylene regin and/or polyolefine system thermoplastic elastomer (it being named "this resinous principle" generically below.).
[0008]
[-izing 3]



the inside of [formula, and R1, R2 and R3 -- an identity -- or -- differing -- a hydrogen atom, the shape of a straight chain of carbon numbers 1-5, a branched-chain alkyl group, the shape of a straight chain of carbon numbers 2-5, and a branched-chain alkenyl machine -- or -- and a methylene group is expressed R4 and R5 -- an identity -- or it differs and the shape of a straight chain, the branched-chain alkyl group, or alkenyl machine of carbon numbers 6-28 is expressed]
[0009]
[-izing 4]



the inside of [formula, and R6, R7 and R8 -- an identity -- or -- differing -- a hydrogen atom, the shape of a straight chain of carbon numbers 1-5, a branched-chain alkyl group, the shape of a straight chain of carbon numbers 2-5, and a branched-chain alkenyl machine -- or -- and a methylene group is expressed R9 and R10 -- an identity -- or it differs and the shape of a straight chain, the branched-chain alkyl group, or alkenyl machine of carbon numbers 6-28 is expressed]
[0010] Although especially the manufacture technique of this ester is not limited and well-known arbitrary operations can be

conventionally used for it, the method of esterifying a predetermined dicarboxylic acid, or the acid anhydride and a predetermined fatty alcohol as the general technique, while removing produced water under presence of a non-catalyst or a catalyst is mentioned.
[0011] The ester expressed with a general formula (1) is easily compounded by carrying out the esterification reaction of an alicyclic unsaturation dicarboxylic acid, or its predetermined anhydride and predetermined fatty alcohol according to a conventional method.
[0012] As the concerned alicyclic unsaturation dicarboxylic acid or its anhydride, the acid anhydride obtained by the reaction of deca trien, such as a tetrahydrophtal acid, a methyl tetrahydrophtal acid, a dimethyl butenyl tetrahydrophtal acid, a ******** acid, a methyl ******** acid, methyl highness ******s, those anhydrides and those isomers (a geometrical isomer and a structural isomer are included.), and **********, alpha-terpinene, and a maleic anhydride, its disengagement carboxylic acid, etc. are illustrated.
[0013] The ester expressed with a general formula (2) is easily compounded by carrying out the esterification reaction of an alicyclic saturation dicarboxylic acid, or its predetermined acid anhydride and predetermined fatty alcohol according to a conventional method. Moreover, it can obtain also by carrying out nuclear hydrogenation of the ester expressed with a general formula (1).
[0014] As the concerned alicyclic saturation dicarboxylic acid or its anhydride, hexahydrophthalic acid, methyl hexahydrophthalic acid, ******** acid hydrogenation object, methyl ******** acid hydrogenation object, 1, and 4-cyclohexane dicarboxylic acids, these acid anhydrides, those isomers (a geometrical isomer is included.), etc. are illustrated.

[0015] The fatty alcohol used as an alcoholic component of each above-mentioned ester concerning this invention is a fatty alcohol of the saturation of carbon numbers 6-28, or an unsaturation, and is a fatty alcohol of carbon numbers 8-24 more preferably. Since the compatibility to a polyolefine system resin falls in less than six alcohol, and it is easy to carry out bleeding of the carbon number, and the molecular weight of ester becomes small and oil resistance falls in the alcohol in which a volatility-proof is inferior with alcohol and a carbon number exceeds 28 conversely, it is not desirable.
[0016] As a desirable fatty alcohol concerning this invention A heptanol, 2-ethyl hexanol, n-octanol, iso nonanol, A 3, 5, and 5-trimethyl hexanol, n-decanol, an iso decanol, An undeca Norian, a dodecanol, a tridecyl alcohol, ********** 610 (vista chemical Far East company make), ********** 79 -- said -- 911 (shell chemistry company make) and gold [a diamond / 79] -- said -- 911 -- said -- 11 -- said -- 113 (Mitsubishi Kasei Corp. make) -- The dimerization alcohol obtained by the gar bed reaction of a myristyl alcohol, cetyl alcohol, a stearyl alcohol, a behenyl alcohol, oleyl alcohol, and these alcohol is illustrated.

[0017] As an esterification catalyst chosen and applied in the above-mentioned esterification A sulfuric acid, a hydrochloric acid, a phosphoric acid, Para toluenesulfonic acid, a methanesulfon acid, Acid catalysts, such as an alkyl sulfuric acid, an aluminum sulfate, lithium fluoride, potassium chloride, Metal salts, such as a cesium chloride, a calcium chloride, ferric chloride, and an aluminium phosphate, ZnO2 / C and SnO, and SiO2- metallic oxides, such as TiO2, ZnO, Fe2O3, and a heteropolyacid, -- Alumina-alkali multicomputer systems, such as aluminum2O3-KOH-LiOH and aluminum2O3-NaOH, Nature, such as a mordenite and a ** cation-ized Y zeolite, and a composite zeolite, Organic metals, such as ion exchange resin, such as solid-state superacid, such as SO42-/ZnO2 and SO42-/TiO2, a cation exchange resin, and an anion exchange resin, tetrapod alkyl titanate and its polymer, Bu2Sn(OBu) alumnus (OBu)2, and the oxalic acid 1st tin, etc. are illustrated.
[0018] Especially as after treatment after an esterification reaction conclusion, although not limited, superfluous alcohol is distilled out of the inside of a system, for example, it passes through a saturation rinsing process, and the method of finally refining ester is mentioned. Moreover, it is also possible to use for the ester which does not refine, only distills off superfluous alcohol out of a system, and starts this invention especially.
[0019] It is the general term of the polymer which the polypropylene regin concerning this invention consists of considering a propylene component as a monomer unit, and the manufacture technique by difference of isotactic one, syndiotactic, the stereochemistry structure that is atactic and is classified, and a catalyst and a process does not ask.
[0020] The polypropylene regin concerning this invention is the general term of the polymer which makes a propylene an indispensable monomer, and, specifically, the copolymer with the homopolymer of a propylene, a propylene, ethylene, and/or 1-alkene (for example, 1-butene, 1-pentene, 1-hexene, 4-methyl-1-pentene, 1-octene, 1-decene, and such mixture) of carbon numbers 4-20, the copolymer of a propylene and styrene, etc. are illustrated. What ** of a random copolymer and a block copolymer is also contained in the above-mentioned copolymer.
[0021] the elastomer which has the blend or alloy structure which serves as the polyolefine system thermoplastic elastomer concerning this invention from EPDM or isobutylene isoprene rubber as polyethylene, polypropylene, and an elasticity phase as a hard phase -- further -- a hard phase ****** -- a transformer -1 -- syndiotactic [********** / 4---poly-/ and] -1, 2-polybutadiene and crystal polyethylene, the homopolymer system elastomer that consists of amorphous poly-**********, and an amorphous polybutadiene and a chlorinated polyethylene as an elasticity phase are mentioned
[0022] the fraction which adds organic peroxide etc. in ****** of olefin system rubber, the blended type by simple mechanical blend of polyolefin resin and olefin system rubber, and polyolefin resin, is made to carry out partial bridge formation of the rubber phase, and is obtained as polyolefine system thermoplastic elastomer concerning this invention -- bridge formation -- a blended type and polypropylene -- a continuous phase and bridge formation -- it consists of the complex which uses EPDM as a dispersed phase -- perfect -- bridge formation -- there is a blended type etc. and it is not based on the

type or the manipulation technique of these
[0023] It is also possible to carry out the polymer blend of other resins to the above, a polypropylene regin, polyolefine system thermoplastic elastomer, or those mixture, to alloy-ize them into them, and to use them for them.
[0024] As an example of the above-mentioned polymer which can carry out a blend Natural rubber, styrene-butadiene rubber, butadiene rubber, polyisoprene rubber, An ethylene propylene diene terpolymer, nitril butadiene rubber, Rubber-like polymers, such as chloroprene rubber, isobutylene isoprene rubber, polyurethane rubber, and silicone rubber, Nylon 6, Nylon 66, Nylon 610, Nylon 612, Nylon 11, Nylon 12, copolymerization nylon, Amide system polymers, such as nylon MXD6 and denaturation polyamide 6T, a polyethylene terephthalate, A polybutylene terephthalate, polyhexamethylene terephthalate, Ester system polymers, such as polyethylene isophthalate, polytetramethylene sebacate, and a polypropylene horse mackerel peat, Polyethylene, the Polly 4-methyl pentene -1, a polyvinyl chloride, a polyvinylidene chloride, ABS plastics, polystyrene, an AS resin, methacrylic resin, polyvinyl alcohol, ethylene vinyl acetate, a cellulose plastic, etc. are mentioned.
[0025] Furthermore, the polystyrene system thermoplastic elastomer represented by polystyrene/polybutadiene, PVC system thermoplastic elastomer represented by a crystal polyvinyl chloride / NBR, The thermoplastic elastomer polyester represented by polyester/polyether, The polyurethane system thermoplastic elastomer represented by urethane structure / polyester, The polyamide system elastomer represented by a polyamide/polyester, It is possible to also blend the elastic elastomer by which the account of an example is carried out by the fluorine polymer system elastomer represented by a fluororesin/fluororubber, the ionomer system thermoplastic elastomer represented by a metal carboxy rate ion cluster / amorphous polyethylene.
[0026] although the loadings of this ester can be variously chosen according to the combination purpose -- usually -- this resinous principle 100 weight section -- receiving -- 0.2 - 60 weight section grade -- it is 0.2 - 35 weight section grade preferably Generally, even if the predetermined reforming effect is hard to be acquired and it blends conversely exceeding the concerned loadings, as for increase of a remarkable effect, it carries out and is not desirable at under the above-mentioned loadings that cannot expect but bleeding increases on the contrary etc.
[0027] The example of a recommendation of the concerned loadings according to the key objective is shown below. That is, in flexibility, cold resistance, and elasticity combination aiming at a shock-proof improvement, it is 0.2 - 5 weight section grade in hard combination aiming at enhancement 5 - 60 weight section grade, workability, fluid, and shock-proof.
[0028] Moreover, in the system which blended bulking agents, such as a calcium carbonate, a fiberglass mat, titanium oxide, clay, carbon black, an antimony oxide, hydration aluminum, a magnesia, a calcium hydroxide, silicic acid, and a metal powder, the loadings about 1 - 100 weight section are chosen.
[0029] Conventionally, this ester may be used together with various kinds of ester compounds known as a plasticizer and a lubricant, and may be blended with the concerned polypropylene regin or polyolefine system thermoplastic elastomer, and those mixture. such a plasticizer ****** -- benzoates, such as ethylene glycol dibenzoate and propylene glycol dibenzoate, dibutyl phtalate, a phthalic-acid dihexyl, ********** (2-ethylhexyl), ********** (n-octyl), a phthalic acid diisononyl ester, a diisodecyl phthalate, phthalic-acid **********, a phthalic acid ditridecyl ester, and gold [a diamond / 79] -- said -- the phthalic ester of 911, and ********** 79 -- said -- phthalic esters, such as a phthalic ester of 911, a phthalic-acid dibutoxy ethyl, and a phthalic acid benzyl butyl ester, and [0030] Aliphatic system ester, such as ********** (2-ethylhexyl), ********** (n-octyl), diisononyl adipate, a diisodecyl adipate, the adipate of ********** 610, an adipate of gold ones 79 a diamond, an adipate of ********** 79, an adipic-acid dibutoxy ethyl, a dioctyl azelate, and ********** (2-ethylhexyl), [0031] Trimellitic acid ester, such as trimellitic acid **** (2-ethylhexyl), trimellitic acid **** (n-octyl), a trimellitic acid ******** nonyl, trimellitic acid triisodecyl, trimellitic acid ester of gold one 79 a diamond, trimellitic acid ester of ********** 79, and a trimellitic acid ********** ethyl, [0032] Phosphoric ester, such as tricresyl phosphate, a phosphoric-acid-2-ethylhexyl diphenyl, and a phosphoric-acid ********** ethyl, [0033] Polyester system plasticizers, such as a propylene glycol and an adipic-acid system, a propylene glycol and a phthalic-acid system, a butylene glycol and an adipic-acid system, and a propylene glycol, a sebacic-acid system, [0034] Epoxy system plasticizers, such as epoxidation soybean-oil, epoxidation linseed-oil, epoxy stearin acid octyl, 4, 5-epoxy hexahydrophthalic acid dioctyl, 4, and 5-epoxy hexahydrophthalic acid screw (9, 10-epoxy stearyl), chlorinated paraffin, etc. are illustrated.
[0035] As such a lubricant, the fatty acid ester of polyhydric alcohol, such as aliphatic system ester, such as a butyl stearate, a stearin acid octyl, stearin acid tridecyl, a lauric-acid octyl, and oleic-acid oleyl, a pentaerythritol tetrapod ****** rate, a pentaerythritol ****** pli rate, a trimethylol-propane ****** pli rate, and trimethylol-propane trio ********, is illustrated.
[0036] Although the loadings of the above-mentioned plasticizer used together by request and a lubricant are not limited especially as long as a predetermined effect is acquired, they are usually 1 - 30 weight section grade to a polypropylene regin or polyolefine system thermoplastic elastomer, and those mixture 100 weight sections.
[0037] Various additives, such as a stabilizer, a stabilization assistant, a workability enhancement resin, an ultraviolet ray absorbent, an antioxidant, a nucleating additive, a bulking agent, a coloring agent, a foaming agent, a lubricant, a resin reinforcement, a cross linking agent, an antimicrobic agent, an antifungal agent, a flame retarder, a mold releasing agent, an insecticide, a repellent, a plate-out inhibitor, and an antistatic agent, etc. can be blended with the polyolefine system resin constituent concerning this invention if needed.
[0038] Especially the manipulation technique of the polyolefine system resin constituent concerning this invention is not limited. For example, the technique of obtaining a product, and the technique of supplying and fabricating the concerned resin constituent to a direct making machine are possible by letting the polyolefine system resin constituent which carried out preliminary mulling of the additive blended this resinous principle, this ester, and if needed, and obtained it pass to various

making machines.
[0039] The reserve mixing of a polyolefine system resin constituent is prepared by mulling the various components of the specified quantity using conventionally well-known kneading machines, such as a Banbury mixer, a Henschel mixer, and a ribbon blender, and the addition sequence is not asked.
[0040] The polyolefine system resin constituent obtained in this way Calender molding, extrusion molding, injection molding, a paste technique, an extension manipulation, a spinning manipulation, etc., It is conventionally fabricated by the technique used in each field. An automobile, Films, such as individual packing of industrial parts fields, such as a homeuse-electronics product, containers, miscellaneous goods, and snack confectionery, an instant food and tobacco, The flat yarns for textiles of a carpet, such as contest the deflection [a base fabric and] made from PP, the monofilament of a rope or a fishing net, Engineering works and construction fields, such as a lagging material of a tarpaulin, ******, a structural gasket, and a makeup steel plate, It is useful as the elasticity applied to hose tubes, such as a duct hose flexible tube, a leather, the materials for agriculture, packing, an electrical-wire cable, various joint material, cold storage parts, the flexible grant agent of concrete, a porous film, etc., half-hard, and a hard constituent.
[0041] Especially, it is useful as a material of the automobile which is the intended use of thermoplastic elastomer and vehicle parts, household-electric-appliances parts, electrical wire and a hose tube, and engineering works, construction and building materials.
[0042]
[Example] An example is hung up over below and this invention is explained to it in detail. In addition, the property of the resin constituent in each example was measured by the following technique, and was evaluated.
[0043] The manufacture:polypropylene regin of a test piece and predetermined ester are mixed at 220 degrees C using a lab plastic strike mill, and a polyolefine system resin constituent is obtained.
[0044] Next, a sheet with a thickness of about 1mm is created under a preheating (3 minutes) and the condition of pressurization (2 minutes, 100kg/cm2) using the 30t press which carried out the temperature up to 220 degrees C. The obtained sheet is cut out in a predetermined size and each examination is presented.
[0045] Measurement:model of melt flow rate (MFR) : Shimazu Flow tester CFT-500C test temperature : 200 degree-C cylinder pressure:10.0kgf/cm2 die : L 10.0mm D 1.0mm preheating time : 240s [0046] Bleeding [-proof] Nature: After leaving a press sheet for one week under a room temperature, the existence of bleeding was observed visually and the following three-stages estimated.
When there is no bleeding When O bleeding occurs slightly In a certain case, O bleeding is notably. x [0047] Tension-test: Based on JIS K 6723, the tension test was performed in 25 degrees C, and plasticizing efficiency was evaluated by measuring fracture elongation.
[0048] : [Cold-resistant] The softening temperature of crash ****** was measured based on JIS K 6745.
[0049] To the [homopolymer:tradename "PN-150" and Tokuyama Soda Co., Ltd. make] made from example 1 polypropylene 100 weight section, hexahydrophthalic acid ****** nonyl 5 weight section combination was carried out, and the press sheet was prepared. When MFR of the obtained sheet was measured, they were 13g / 10 minutes.
[0050] As two examples ester, ********** (n-******) was used, and also the sheet was prepared according to the example 1. When MFR of the obtained sheet was measured, they were 13g / 10 minutes.
[0051] As three examples ester, hexahydrophthalic acid ********** was used, and also the sheet was prepared according to the example 1. When MFR of the obtained sheet was measured, they were 12g / 10 minutes.
[0052] As four examples ester, hexahydrophthalic acid dioleoyl was used, and also the sheet was prepared according to the example 1. When MFR of the obtained sheet was measured, they were 12g / 10 minutes.
[0053] As five examples ester, 4-methyl hexahydrophthalic acid ****** nonyl was used, and also the sheet was prepared according to the example 1. When MFR of the obtained sheet was measured, they were 13g / 10 minutes.
[0054] As six examples ester, the tetrahydrophtal acid ****** nonyl was used, and also sheet physical properties were prepared according to the example 1. When MFR of the obtained sheet was measured, they were 13g / 10 minutes.
[0055] As seven examples ester, tetrahydrophtal acid ********** was used, and also sheet physical properties were prepared according to the example 1. When MFR of the obtained sheet was measured, they were 13g / 10 minutes.
[0056] As eight examples ester, tetrahydrophtal acid ** (2-hexyl ******) was used, and also the sheet was prepared according to the example 1. When MFR of the obtained sheet was measured, they were 12g / 10 minutes.
[0057] As nine examples ester, 4-methyl tetrahydrophtal acid ****** nonyl was used, and also the sheet was prepared according to the example 1. When MFR of the obtained sheet was measured, they were 13g / 10 minutes.
[0058] As ten examples ester, 3 and 6- and the methylene tetrahydrophtal acid ****** nonyl were used, and also the sheet was prepared according to the example 1. When MFR of the obtained sheet was measured, they were 13g / 10 minutes.
[0059] An example of comparison 1 ester system compound was not blended, and also the sheet was prepared according to the example 1. When MFR of the obtained sheet was measured, they were 9g / 10 minutes.
[0060] After having carried out hexahydrophthalic acid ****** nonyl (it is written as "H-9" below.) 25 weight section combination and preparing a press sheet to the [block-copolymer:tradename "PN-630" and Tokuyama Soda Co., Ltd. make] made from example 11 polypropylene 100 weight section, the sheet physical properties were measured. The obtained result is shown in the 1st table.
[0061] As 12 examples ester, ********** (n-******) (it is written as "H-10" below.) was used, and also sheet

physical properties were measured according to the example 11. The obtained result is shown in the 1st table.
[0062] As 13 examples ester, hexahydrophthalic acid ********** (it is written as "H-13" below.) was used, and also sheet physical properties were measured according to the example 11. The obtained result is shown in the 1st table.
[0063] As 14 examples ester, hexahydrophthalic acid dioleoyl (it is written as "H-18" below.) was used, and also sheet physical properties were measured according to the example 11. The obtained result is shown in the 1st table.
[0064] As 15 examples ester, 4-methyl hexahydrophthalic acid ****** nonyl (it is written as "MH-9" below.) was used, and also sheet physical properties were measured according to the example 11. The obtained result is shown in the 1st table.
[0065] As 16 examples ester, the tetrahydrophtal acid ****** nonyl (it is written as "T-9" below.) was used, and also sheet physical properties were measured according to the example 11. The obtained result is shown in the 1st table.
[0066] As 17 examples ester, tetrahydrophtal acid ********** (it is written as "T-11" below.) was used, and also sheet physical properties were measured according to the example 11. The obtained result is shown in the 1st table.
[0067] As 18 examples ester, tetrahydrophtal acid ** (2-hexyl ******) (it is written as "T-16" below.) was used, and also sheet physical properties were measured according to the example 11. The obtained result is shown in the 1st table.
[0068] As 19 examples ester, 4-methyl tetrahydrophtal acid ****** nonyl (it is written as "MT-9" below.) was used, and also sheet physical properties were measured according to the example 11. The obtained result is shown in the 1st table.
[0069] As 20 examples ester, 3 and 6- and the methylene tetrahydrophtal acid ****** nonyl (it is written as "NA-9" below.) were used, and also sheet physical properties were measured according to the example 11. The obtained result is shown in the 1st table.
[0070] As two examples ester of a comparison, the liquid paraffin was used, and also sheet physical properties were measured according to the example 11. The obtained result is shown in the 1st table.
[0071] As three examples ester of a comparison, stearin acid tridecyl (it is written as "TDS" below.) was used, and also sheet physical properties were measured according to the example 11. The obtained result is shown in the 1st table.
[0072] As four examples ester of a comparison, ********** (2-ethylhexyl) (it is written as "DOP" below.) was used, and also sheet physical properties were measured according to the example 11. The obtained result is shown in the 1st table.
[0073] The press sheet of the polypropylene (block copolymer) which does not blend an example of comparison 5 ester system compound was prepared, and the sheet physical properties were measured according to the example 11. The obtained result is shown in the 1st table.
[Table 1]

第 1 表

	エステル	ブリード	伸び (%)	柔軟温度 (℃)
実施例11	H－9	◎	330	－42
実施例12	H－10	◎	314	－46
実施例13	H－13	◎	280	－40
実施例14	H－18	◎	241	－40
実施例15	MH－9	◎	323	－42
実施例16	T－9	◎	326	－42
実施例17	T－11	◎	302	－46
実施例18	T－16	◎	257	－40
実施例19	MT－9	◎	320	－42
実施例20	NA－9	◎	315	－42
比較例2	流動パラフィン	◎	22	－35
比較例3	TDS	○	31	－33
比較例4	DOP	×	144	－38
比較例5	－	－	75	1

[0074]
[Effect of the invention] By blending the ester system compound concerning this invention, it excels in a compatibility, plasticizing efficiency, cold resistance, shock resistance, and a fluidity, a fabricating operation can be easily done by the various molding technique by thermoplasticity, and a useful polyolefine system resin constituent can be obtained as a molding material.

[Translation done.]